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## PERIODICAL ABSTRACTS

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NIPPON KIKAI GAKKAI ZASSHI

"Journal of the Society of Mechanical Engineers,  
Japan"

4406.0000

Published monthly by Society of Mechanical Engineers, Japan. Articles, experimental data, and summaries on mechanical engineering subjects by the society members and prominent Japanese engineers.

The following are abstracts of articles from Japanese-language issues of Feb 1945 to Jul 1946.

Feb-Apr 1945 - Vol 48, No 332

## Section I, Engineering Articles and Reports

"Coupled Vibration of the Propeller Shaft and Blades, Part III".

4406.0400

An explanation of the vibration formula, the stability of the two blade propeller under the flexing vibration of the propeller shaft, SHIMIZU Hiroshi. 3 pp.

"A Study of the Breakdown Properties of Materials"

4413.0000

The theory of static and dynamic stresses. ONO Akimasa. 2 pp.

4205.0200

"Theoretical Research on Stage Efficiency of Steam Turbines, Part 3"

4406.0400

The theory of the compound-velocity impulse turbine, Curtiss and Terry turbines. SUGAHARA Sugao, NAKAMURA Kozo. 2 pp.

"The Minimum Value of the Critical Reynold's Number"

8700.0000

A study of fluid flow in a round tube. ITAYA Shoju, IWANAMI Shigezo. 1½ pp.

"Quantity of Air Absorbed in Oil"

4203.0500

A study of faulty lubrication in machinery caused by the presence of air. ITAYA Shoju. 3 pp.

"Research on Sharp-edged Orifice and Its Influence on Coefficient of Discharge"

8700.0000

Theoretical study. MATSUMOTO Yokichi. 1 p.

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"Hydraulic Research on Bearing Clearances and Its Relationship to Increased Bearing Efficiency, Part 3"	4406.0000
A study on shape of bearing clearances and the problems in lubrication. KOMAI Kanji. 2 pp.	
"Rotary-Type Bending Fatigue Tester for Large Specimens"	4406.0300
ONO Akimasa. 1/2 p.	
"Bearing Efficiency of Knife Edges"	4406.0300
A study of bearing loads and shape of knife edges. AKASHI Kazue. 1/2 p.	
"The Study of the Corrected Spur Gear"	4406.0300
A study on shape of spur gears and its mechanical efficiency. OTA Fumihiro. 2 pp.	
"Gear Shapes Having Constant Sliding Factor"	4406.0300
A study of involute and cycloidal gears. HORIUCHI Yoshikazu. 1 p.	

## Section II, Contributed Articles

"A New Experimental Formula for the Coefficient of Friction in Pipes"	8700.0000
ITAYA Shoju. 1 p.	
"Hertz's Hardness Theory"	8700.0000
The theory and experiments in hardness factor. AKASHI Kazue. 1 p.	

## Section III, Summary

"Measuring Apparatus and Measuring Methods, Part 8"	4406.0300
Different methods of obtaining hardness of steel experimentally, and experimental results. YOSHIZAWA Takeo. 9 pp.	
"Internal Combustion Engines, Part 9"	4406.0400
Methods employed to eliminate vibrations in Diesel-engine mounts. SEKI Toshiro. 11 pp.	

## Section IV, Selected Patents

(TN: Only patents with numbers above 160,000 (1943) are abstracted in this section.)

Patent No 161224, "Speed Governor on the Carburetor of an Engine"	4406.0000
TANAKA Hiroji.	
Patent No 161295, "Power Transmission in Aircraft Engines"	2302.0200
A new type of power drive from the aircraft engine to the propeller. KUROKAWA Masazo.	

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Patent No 161494, "Precision Bearing for High Speed Drive Shafts" 4406.0000  
 A bearing which adapts itself to expansion of the shaft. NAKASHIMADA Masao.

Patent No 161522, "Hydraulic Control for Aircraft Use" 2302.0200  
 A spring-loaded control mechanism for the hydraulic system. ARAYAMA Haruo.

Patent No 161296, "Air-cooled Cylinder Heads" 4406.0400  
 A new type of cylinder head for internal-combustion engines. OKADA Shunichi.

Patent No 161573, "Gas Generating Apparatus for Aircraft Use" 2302.0200  
 An apparatus for generating gas from liquid fuels. SUZUKA Yuzaburo.

Patent No 161647, "A Method of Supplying Auxiliary Ignition Fuels into the Fuel Line of a Diesel Engine" 4406.0400  
 TANAKA Hiroji.

Patent No 161670, "A Vacuum Casting Box" 4205.0215  
 After the pattern is removed from the sand mold, the air is expelled. This decreases the number of blow-holes in the casting. SASAKI Rokuro.

Patent No 161789, "Water-cooled Vanes for Hot Fluid Turbines" 4406.0100  
 The coolant is circulated through three sets of holes in the core of each vane. EGUCHI Kinzo.

Patent No 161791, "Electro-plating Apparatus Using Different Alloys or Metals Simultaneously" 4205.1000  
 Different metal wires are electrically melted and then sprayed for plating by compressed air. SHITAMURA Toshihiko.

Patent No 161792, "Reverse Screw Air Blower" 4406.0100  
 Each of the three fins on blower are spun by means of bevel gear system. KADOWAKI Tokuichiro.

Patent No 162226, "Improvements on the Rotary-type Air Compressor" 4406.0100  
 KAWADA Sanji.

Patent No 162447, "Reaction Thrust Mechanism" 4406.0400  
 Improvements on the rocket-type mechanism. NAITO Shisei.

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May-Dec 1945 - Vol 48, No 333	4205.0200
Section I, Engineering Articles and Reports	
"Fatigue and Internal Distortion in Metals" A short review. NISHIHARA Toshio.	4205.0200
"A Derivation of Metal Fatigue Curve" NISHIHARA Toshio.	4205.0200
"The Strength of Rectangular Plates Having Plug Welds, and the Relationship Between the Hardness of Plug Weld and the Course of Rupture of Plate when Subjected to Tension" MIMA Genjiro.	4413.0800
"The Strength of Copper-lead Alloys and the Microscopic Study of Its Failure when Subjected to Tension" MIMA Genjiro.	4205.0902
"Distortion of Rectangular Plate Having a Circular Hole when subjected to Tension, and Relationship Between the Diameter of Hole and the Plate Thickness" MIMA Genjiro.	4413.0800
"A Method for Calculating the Stability of Bent and Twisted Beams, Report No 1 and (Same as Report 1, except the cross-section of beams are not uniform) Report No 2" Kondo Seiji.	4413.0800
"The Study of Fuel-Injection Type Gasoline Engine, Report No 1, Vaporization and Combustion of Gasoline in Combustion Chamber" A study of gasoline engine having a fuel injection system and electric ignition, not employing a carburetor. NAGAO Fujio.	4406.0400
"An Experiment on the Removal of Guide Vanes in a Centrifugal Pump" Author's arguments against the use of guide vanes. ODA Toshiyuki.	4406.0100
"V-Section, Laminated, Metal Packings" A report on the advantages of above packing over that of leather packings. HITAKA Koichi.	4406.0100
"Metal Packings to be Used between Two Moving Parts" A research report on development of a new type of metal packing for above use. HITAKA Koichi.	4406.0100

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## Section II, Contributed Articles

"Various Problems Concerning Compressed-Air Conveyors, Report No 2" . 4406.0100  
 Rated efficiency, performance, and indicator diagrams of the air compressor.  
 NIMURA Kosuke. 4 pp.

## Section III, Summary

"Applied Mechanics and Dynamics of Machinery, Part 10 - The Economy of Materials During Manufacturing Processes" . 4406.0100  
 Article stresses importance of preliminary inspection of materials, such as static and dynamic stability, tensile strength, fatigue, etc. before assembling of parts. UTOGUCHI Eizen.  $3\frac{1}{2}$  pp.

"Industrial Raw Materials and Testing of Materials, Part 2, the Elastic Properties of Steel Bolts Under High Temperatures" . 4413.0000  
 A study on elasticity of steam boiler flange bolts. ITO Shigeru. 2 pp.

"Measuring Apparatus and Measuring Methods, Part 12, Experiments with Vibrator" . 4406.0300  
 An apparatus which induces vibration in machine parts to study its dynamic properties. UTOGUCHI Eizen.  $2\frac{1}{2}$  pp.

"Internal Combustion Engines, Part 13, Flexible Mounts for Reciprocating Engines" . 4406.0400  
 A study of various methods employed for mounting stationary reciprocating engines, e.g., Diesel engines, WAAS, Heinrich (German report translated by SEKI Toshiro.) 10 pp.

"Aircraft and Aircraft Engines, Part 14, Fatigue Tests of Light-Alloy Connecting Rods" . 2302.0200  
 Emil von Rajakovics (German report translated by UTOGUCHI Eizen.) 1 p.

## Section IV, Research Data

"Standards for Tensile Strength Tester, Compression Load Tester" . 4420.0300  
 A listing of Japanese standards in regards to testing methods using the above machines.. ONO Akimasa. 2 pp.

"An Explanation on the Adopted Standards for the Tensile Strength Tester and Compression Load Tester" . 4420.0300  
 TAKENAKA Jiro.  $3\frac{1}{2}$  pp.

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"Elasticity Testing Apparatus" 4420.0300  
 An explanation of the above apparatus, and method of calculating the elasticity of material. OE Teiji. 3 pp.

"VDI Standards - VDI Standard for the Shapes and Use of Rubber" 4416.0202  
 Characteristics of rubber (natural and synthetic), standards for different types of rubber, method of manufacture of different rubber products, etc. Publication by VDI (German) Technical Committee on Synthetic Materials, translated into Japanese. 19 pp.

Jan 1946 - Vol 49, No 334

Section I, Engineering Articles and Reports

"The Strength of Metals under Alternating Bending and Torsional Stresses" 4205.0900  
 Theory and experimental tests. NISHIHARA Toshio. 1½ p.

"Adhesion of Bearing Alloys, Report No 1" 4205.0900  
 Testing and treating of alloy in order to improve the adhesive properties. SAGA Takuro. ½ p.

"Research on Starting Friction of Babbitt-type Bearings" 4205.0900  
 A study of the starting friction of the babbitt bearing using vegetable oil, animal oil and petroleum oils as lubricants. SASAKI Tokio. ½ p.

"The Endurance Limit of Round Bar Having a Small Diametrical Hole" 8700.0000  
 The study in the endurance strength of aluminum, chrome-steel and aluminum alloy specimens. MINAMIOJI Kenichi. ½ p.

"The Study on the Elasticity of a Bar Subjected to a Distributed Load" 8700.0000  
 The theory of shear and bending moment in a bar subjected to a distributed load. KITO Fumiko. 3 pp.

"Tables and Diagram for Freon 22" 4504.0200  
 Thermodynamical theory and application of Freon 22. SUGAWARA Sugao. 2 pp.

"Experiments with the Double-Vacuum Phénoménon in Steam Ejectors" 4406.0100  
 Graphs showing the performance of steam ejectors. SUGAWARA Sugao. 6 pp.

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"Test Results on Firing of Low-grade Coal in Steam Locomotives" 4402.0000  
 Graphs and tables. YOKOBORI Susumi. 2½ pp.

"Experiments on the Hydraulic Resistance of Automatic Valves" 4406.0100  
 Theory and experiments in connection with automatic valves in hydraulic pumps and reciprocating compressors. YAMAGISHI Ryuichi. 4 pp.

"Calculation Concerning the Effect of Roughness upon the Development of Cavitations" 8700.0000  
 Theory and experiments in connection with the effect of roughness on bodies when placed in a fluid flow, e.g., effect of roughness on the surface of a marine propeller. KITO Fumiko. 3½ pp.

"A Study on the Efficiency of Pneumatic Forging Hammers" 4406.0100  
 KONDO Seiji. 2 pp.

"Automatic Polishing Machine" 4406.0100  
 An introduction to a new-type polishing machine for putting superfinishes on industrial products. SASAKI Tokio. 2½ pp.

#### Section II, Contributed Articles

"Introduction to a New-type Conical Gear" 4406.0300  
 A new type of bevel gear which transmits power at other angles than a right angle. ARAKAWA Nobuo. 2½ pp.

#### Section III, Summary

"Industrial Raw Materials and Testing of Materials, Part 1" 4413.0000  
 The significance of the yielding point in connection with the fatigue strength of high-tensile steel, the characteristics of steel under tension and compression after cooling to low temperatures. Originally a German article, translated by UTOGUCHI Eizen. 11 pp.

#### Section IV, Research Data

"Welding Standards for Machine Design" 4401.0000  
 A compilation of various specifications and standards in regards to industrial welding:

1. Standards for the x-ray examination of electrical welds. 5 pp.
2. Specifications for flange weldings. 3 pp.
3. Specifications for seam welding. 1 p.

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4. Standards and specifications for electro-welding. 5 pp.
5. Specifications for steam-boiler welding, welding standards for boilers, and all other auxiliaries in a boiler plant. 24 pp.

Feb 1946 - Vol 49, No 335

## Section I, Engineering Articles and Reports

"The Future of Industrial Welding"	4401.0000
A general discussion of the welding progress in industry, and its future outlook. SASAKI Shintaro. 6½ pp.	
"Development of Internal Stresses in Non-cylindrical Shells Due to Welding"	4401.0000
A method of computing the internal stresses developed in the welding of non-cylindrical shells. MIZOGUCHI Koki. 1½ pp.	
"Brittleness of Steel at Low Temperatures"	4205.0233
A discussion of the impact, tensile, and hardness tests of special steels at low temperatures. KASHIWABARA Masakatsu. ½ p.	
"A Study on Fatigue and Internal Friction of Metals, Report No 3"	4205.1000
Theory and graphs. ENOMOTO Nobusuke. 1½ pp.	
"The Vibration of Linear Beams Due to Dynamic Loads"	4413.0000
Theory and mathematical explanations. ONO Akimasa. 3 pp.	
"Problems in the Thermal Conductivity of a Body Having Thermal Coefficients Which are Affected by Time, Position and Temperature"	8700.0000
SAWADA Masayoshi. ½ p.	
"Viscous Flow through a Rectangular Channel and Its Application to the Friction Pump"	4406.0100
SHIRAKURA Masaaki. 2½ pp.	
"Horizontal Valve System, Low-Pressure Diesel Engine"	4406.0400
YAMASHITA Okiie. 1½ pp.	
"Theory and Operation of the Cupola, and the Remelting of Steel Filings"	4205.0235
ITO Kokichi. 2 pp.	
"The Analytical Theory of Spur Gears"	4406.0300
KUBOTA Masao. 1½ pp.	

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- "The Theoretical Study on the Cutting Hob for Involute Gears" 4406.0300  
 MOROZUMI Muneharu. 1½ pp.
- "The Change in the Internal Stress of Steel Balls for Bearings During the Course of Manufacture" 4406.0300  
 KAWAGUCHI Toranosuke. 2½ pp.
- "Applications of the Pneumatic Micromètre" 4420.0300  
 An explanation of the French Solex Pneumatic Micrometer. ISHIHARA Seiichiro. 4 pp.
- "A Graphical Solution of Vibration Problems" 8700.0000  
 Theory and mathematical explanations. TAKAHASHI Yasundo. 2½ pp.
- "A Constant-Speed Device for Circular and Non-circular Wheels Connected by a Cord" 8700.0000  
 TAKAHASHI Yasundo. 2½ pp.

## Section II, Research Data

- "Standards for the Charpe and Izod Impact Tester" 4420.0300  
 ONO Akimasa. 4 pp.

Mar-May 1946 - Vol 49, No 336

## Section I, Engineering Articles and Reports

- "Experiments with the Twisting of Materials which Show Lateral-Bending Tendencies" 8700.0000  
 MII Hisao. 3 pp.
- "The Research of Internal Stresses Due to Quenching of Steel" 4205.1002  
 The study of the internal stresses remaining in different steels after the quenching process.  
 SUGENO Takeshi. 3 pp.
- "Hydrostatic Pressures on Rectangular Plates" 8700.0000  
 Mathematical study of fluid pressures on rectangular plates. WATANABE Masaki. 2 pp.
- "Plasticity of Rectangular Plates under Bending Moments Uniformly Distributed Along Its Edges" 8700.0000  
 WATANABE Masaki. 4 pp.
- "Measurement of Three-Dimensional Stress by X-Ray" 8700.0000  
 The study of stress in steels and alloys.  
 ISHII Yugoro. 2½ pp.
- "A Mathematical Solution of a Girder Supported by n + 1 Cross Beams" 4413.0000  
 Shear and moment calculations. NAGAMOTO Kikuo.  
 2 pp.

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"The Thermodynamic Properties of Dichlorodifluoromethane" 4408.0100  
 Research on dichlorodifluoromethane and its adaption  
 to industrial use. SUGAWA Sunao. 2 pp.

"Problems in the Thermal Conductivity of a Body Having  
 Thermal Coefficients which Are Affected by Time,  
 Position and Temperature, Report No 2" 8700.0000  
 SAWADA Masayoshi. 2 pp.

"Characteristics of Friction Pumps Having Opposed  
 Actuators of Equal Peripheral Velocity (High-Efficiency  
 Friction Pump) Report No 3" 4406.0100  
 MIYAZU Atsushi. 3 pp.

"Characteristics of Laminar and Turbulent Flow in  
 Friction Pumps with Opposed Actuators Having Equal Per-  
 iipheral Velocity (High-Efficiency Friction Pump)  
 Report No 4" 4406.0100  
 MIYAZU Atsushi. 2½ pp.

"The Effect of the Fluid-Passage Cross-section on the  
 Characteristics of the Friction Pump (High-Efficiency  
 Friction Pump) Report No 5" 4406.0100  
 MIYAZU Atsushi. 3 pp.

"Spur-Gear Calculations Using the Analysis of the Tooth-  
 Profile Curve, Report No 1" 4406.0300  
 A mathematical analysis and graphs. MORITA Katsuhiko.  
 3 pp.

"Spur-Gear Calculations Using the Analysis of the Tooth-  
 Profile Curve, Report No 2" 4406.0300  
 A mathematical analysis and graphs. MORITA  
 Katsuhiko. 2 pp.

#### Section II, Contributed Articles

"Calculating Safety Factors" 8700.0000  
 Calculating safety factors for various shapes.  
 OKUDA Katsumi. 8½ pp.

#### Section III, Summary Section

"Automobiles and Automobile Engines" 4403.0200  
 The brake control system. F. Ostwald (German). 2 pp. 4406.0400

#### Section IV, Research Data

"Welding Standards for Machine Design" 4401.0000  
 A compilation of various specifications and standards  
 in regards to industrial welding and marine crank-  
 cases and cylinder blocks. 54 pp.

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Jun 1946 - Vol 49, No 337

## Section I, Engineering Articles and Reports

- "Joining of Metals With Heat" 4205.1000  
 Experiments on the adhesive properties of various metals at a temperature much lower than its melting point. IGATA Atsuomi. 4 pp.
- "Volumetric Efficiency of Four-cycle Engines, Report No 3" 4406.0400  
 The effects of different valve timing. ASANUMA Tsuyoshi. 2 pp.
- "Calculation of the Life of a Roller Bearing" 4406.0300  
 NISHIHARA Toshio. 2 pp.
- "Theoretical Calculation on Pressure Waves Generated by a Ship Propeller" 4406.0400  
 KITO Fumiki. 3 pp.
- "Research of a Gear Pump Having a Sine-Curve Gear" 4406.0100  
 ITAYA Shoju. 1 p.
- "Test Results on Firing of Low-Grade Coal in Steam Locomotives, Report No 2" 4402.0000  
 YOKOBORI Susumu. 2 pp.
- "Accuracy of Machine Tools" 4406.0300  
 The loss of lathe accuracy due to static loads. OKUSHIMA Keiji. 1 p.
- "The Study of Metal Cutting" 4406.0300  
 The relationship between the cutting force and the cutting speed. EBIHARA Keikichi. 4½ pp.
- "The Precision of the Indexing Table on a Boring Machine" 4406.0300  
 KOSHIBA Tokuji. 2 pp.
- "The Strength of Hooks" 4406.0100  
 NANRI Takeichi. 1 p.

## Section II, Contributed Articles

- "The Theory of Head Loss in a Disturbed Flow and Its Practical Application" 8700.0000  
 MIYAZU Atsushi. 1½ pp.
- "A Filing System for Cataloging Engineering Drawing" 8710.4000  
 A card-filing system for engineering drawings, and each card has the following information: the article, its dimensions, its use, etc. KOBAYASHI Toshio. 2 pp.

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"Measuring Instrument for Thread Diameters" 8700.0000  
 The study of the air micrometer and its use  
 for thread measuring. ISHIHARA Seiichiro. 1½ pp.

Jul 1946 - Vol 49, No 338

## Section I, Engineering Articles and Reports

"The Fatigue Limits of Stamp-Forged Pieces" 4205.1000  
 Experimental results. KAWAMOTO Minoru. 3 pp.

"The Mathematical Calculation for the Buckling of a Solid Column which Does Not Follow Hook's Law" 4413.0000  
 SATO Shichiro. 3½ pp.

"Experiments with Bearings Subjected to Variable Loads" 4406.0300  
 SUGIMOTO Yutaka. 3½ pp.

"Elastic Buckling of Polygonal Plates Clamped at Its Edges" 8700.0000  
 YAMAMOTO Masayuki. 1 p.

"Transverse Vibrations of Circular Disks" 8700.0000  
 TAKAHASHI Toshio. 2½ pp.

"Mathematical Solution on the Boundary Layer of a Flat Plate" 8700.0000  
 ASAO Harumi. 2½ pp.

"The Study of Gear Tooth Profiles, Report No 2" 4406.0300  
 The study in the patches of contact and gear-tooth profiles. HORIUCHI Yoshikazu. ½ p.

"Mathematical Calculations for Involute Gears Having a Normal Pitch" 4406.0300  
 OKADA Isamu. 2 pp.

## Section II, Research Data

"Data of the Micron H-102 Gear-Hobbing Machine" 4406.0300  
 OTOBE Shunji. 2 pp.

"Magnetic Drill and Universal Joint" 4406.0300  
 YOSHIDA Isamu. 1 p.

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